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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,603	01/16/2002	Devinder Mahajan	BSA 01-09	2861
26302	7590	09/22/2004	EXAMINER	
BROOKHAVEN SCIENCE ASSOCIATES/ BROOKHAVEN NATIONAL LABORATORY BLDG. 475D - P.O. BOX 5000 UPTON, NY 11973			BROWN, JENNINE M	
			ART UNIT	PAPER NUMBER
			1755	
DATE MAILED: 09/22/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/046,603	Applicant(s) MAHAJAN, DEVINDER	
	Examiner Jennine M. Brown	Art Unit 1755	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 14 May 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03/25/04</u> . | 6) <input type="checkbox"/> Other: _____ |

Claim Objections

Applicant's amendment obviates Examiner's previous objections, therefore the objection has been withdrawn.

Claim Rejections - 35 USC § 112

Applicant's amendment obviates Examiner's previous rejections, therefore these rejections have been withdrawn.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 4 and 17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 4 depends on claim 1 which is drawn to a homogeneous catalyst and the limitation further limiting the "purified synthesis gas" is part of the claim preamble. The preamble does not necessarily add life or breadth to the claim, therefore claim 4 would not further limit the catalyst composition of claim 1. Claim 17 depends on claim 16, which requires the metals are from Groups 6-9 or mixtures thereof but nickel, copper, palladium and platinum are not metals within these groups, causing a lack of antecedent basis problem within these claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-14 and 20-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Marchionna, et al. (US 5238895).

Marchionna, et al. disclose prior art having at least one copper compound (alkoxide, aryloxy, halide, hydride) complex with a metal alkoxide (sodium methoxide) in a solvent system (col. 1, l. 46-57). The claimed invention disclosed in the patent requires titanium alkoxides and alkoxides of the lanthanum group (col. 2, l. 19-23, 32-44). A methanol solvent system is disclosed (col. 3, l. 3-5). Examples 1-17 disclose a synthetic method using (a) CuCl, CH₃ONa and Sm(OMe)₃ or La(OMe)₃, and Ti(OMe)₄. The primary claims lack a definition of any specific metal used other than "transition metal" and each of those given supra would be appropriate and have alkoxides of methanol, which are considered O-donor ligands and are dissolved in a methanol solvent system. Furthermore the copper compound preferred is not a carbonyl but a chloride, although carbonyl is one of the complexes given in the specification's Markush groups. The synthesis ("syn") gases used are H₂ and CO (col. 4, l. 7-9). A period of 7 hours is given for reaction of the catalyst components to make synthesis gas (col. 4, l. 64).

With regards to claims 20-22, the product-by-process claimed and taught by the references appear to be the same. According to MPEP 2213, "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its

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method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marchionna, et al. as applied to claims 1-14 and 20-22 above, and further in view of Jackson, et al. (US 6248796 B1).

Marchionna, et al. disclose a catalyst system for production of methanol from synthesis gas as disclosed supra. Marchionna, et al. fail to disclose a co-solvent, co catalyst and optional support.

Jackson, et al. disclose a catalyst system and method for the production of mixed alcohols from syn gas. Jackson, et al. disclose C₁-C₄ alcohols prepared from synthesis gas (H₂/CO), using a Cr, Mo or W catalyst or mixtures thereof, sulfiding the metal and optionally supporting it on carbon, alumina or silica and reacting the materials from 200-300 degrees C and from 500 to 3000 psig (col. 2, l. 18-67). Jackson, et al. disclose that the catalyst may be supported or unsupported on a high surface area support such as carbon, alumina, silica or the like (col. 2, l. 45-48). It would have been obvious for one of ordinary skill in the art to deposit a catalyst on a support such as those listed above because it becomes easier to separate the catalyst from the product produced and makes recycling of the catalytic materials easier. Jackson, et al. further disclose the catalyst suspended in an inert solvent (col. 2, l. 49-51). Although the specific solvent was not given it would have been obvious to one of ordinary skill in the art to use a polyethylene glycol or other co solvent because this would increase the solubility of the catalyst and syn gas ingredients for creation of the alcohols yet would not solvate the alcohols produced, causing an easy separation. Jackson, et al. disclose group 6 metals Cr, Mo and W and a mixture thereof (col. 2, l. 26-28), therefore one of these could be considered the catalyst and the other metal or metals could be considered the co-catalyst, therefore it would have been obvious to one of ordinary skill in the art to

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modify the catalyst of Marchionna, et al. to substitute molybdenum and tungsten for one of the chromium compounds disclosed in Marchionna, et al. because they should have similar reactivity and one could tailor the length of the carbon chain in the alcohol during synthesis by using a different metal or co-catalyst.

Response to Arguments

Applicant's arguments with respect to the previous 35 U.S.C. §112 rejection and 35 U.S.C. §102(e) rejection over Mahajan has been fully considered and are persuasive. The previous rejections have been withdrawn.

Marchionna, et al. have been formally applied to clarify the issues remaining regarding this reference. Applicant's arguments re: Marchionna, et al. have been considered. The scope of the claims is much broader than what is argued by applicants and should claims 1 and 20 specifically claim total methanol production, production time, amounts or molar weight of catalyst and/or specific composition of the catalyst, these arguments would be persuasive. Any catalyst comprising a transition metal and an alkoxide in a solvent currently read on the primary claims, such as a Ziegler Natta catalyst comprising titanium alkoxides in a solvent.

Newly cited prior art in the IDS of 03/25/2004 has been considered and applied.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennine M. Brown whose telephone number is (571) 272-1364. The examiner can normally be reached on M-F 8:00 AM - 6:00 PM; first Friday off.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Bell can be reached on (571) 272-1700. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

jmb



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